# Sexual dimorphism in the juvenile plumage of the Courol *Leptosomus discolor* and considerations on its affinities

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The Courol or Cuckoo-roller is endemic to Madagascar and all four Comoro Islands (Grand Comoro, Moheli, Anjouan, Mayotte). Although a common species, nothing of its breeding habits was known until the description of nest histories by Forbes-Watson (1967) and Appert (1968). These authors also presented a description of the nestlings, but their sexual dimorphism remained undescribed. However, Appert indicated that in Madagascar males and females could be recognized at the moment of fledging, but without detailing any distinctive feature. Benson *et al.* (1976) mentioned that juvenile males (sexed by dissection) were in female dress, and Langrand (1990) says that immatures differ from the female by generally drabber plumage. That the adult male has a non-breeding dress, similar to the female's, as stated by Milon *et al.* (1973), is refuted by our observations on moult in many specimens.

At variance with the statements by Benson (1960) and Forbes-Watson (1967) that Courols are not molested by the Comorian people, a box with two young taken from a nest was obtained from children at Moroni, Grand Comoro, on 30 November 1989. The birds were well-feathered and probably already some four weeks old. We kept them in our house for another ten days until the older flew off unexpectedly; the younger was released shortly afterwards. The normal prey is chameleons and large insects, but, except for some insects, we fed offal of poultry and fish, corned beef and occasionally *Mabuya* lizards. Each of the young grew 28 g over the first seven days with us, to 216 and 228 g, respectively. These are high figures since an adult male and female from this small Grand Comoro subspecies *gracilis* weighed only 160 and 196 g respectively (pers. obs.); recorded weights of adult males of the decidedly larger nominate race are 219, 222, 205, 192 and 205 g (Benson *et al.* 1976; pers. obs.). A female from the subspecies *intermedius*, endemic to Anjouan, was still heavier (270 g), but might have been in pre-laying condition (pers. obs.).

There was a prominent dimorphism in the juvenile plumage, which we believe to be sexual (the birds were not sexed internally and sexing on the blood samples taken from both failed in the laboratory, so we cannot be certain). The smaller ('male') bird had the mantle feathers and all wing coverts dark grey with a suffused metallic green-blue-purple gloss towards the rusty tips and on the outer webs. The remiges were dark grey with clear gloss on the outer webs. The larger ('female') bird had no gloss, and the rusty parts on the mantle and wing coverts were much more extensive, giving her in profile a more uniform rufous colour in contrast to the rusty on dark grey speckled aspect of the other bird. The outer webs of the remiges had a broad rufous band in the 'female', and no gloss. The

rectrices had a dark subterminal band in the 'male', but were more uniformly bright rufous in the 'female'. The rear end of the cap was darker grey and less barred in the 'male'. The adult male's facial pattern of a black eye stripe and a black band across the head between the eyes (see, e.g., photo in Appert 1968) was already indicated in the 'male', but absent in the 'female'. The 'male' also had more whitish underparts, the 'female' more buffish, corresponding to the dimorphism in the adult. In general, the 'female' juvenile plumage closely resembled the adult female plumage. On the other hand, the greyer upperparts and whiter underparts, the facial pattern, and the presence of gloss on the plumage are all features of the adult male which are already apparent in the juvenile. A fledged juvenile male from Moheli (KMMA no. 83-43-A-798), where the nominate race occurs, is more pale grey-brown on the back, but otherwise follows the patterns described above in the juvenile 'male' of the race *gracilis* from Grand Comoro. Sexual dimorphism in the juvenile plumage is likely to be restricted to the facial mask in the race *intermedius*, because in this peculiar race the adult females also have extensive gloss, making them an example of the insular evolutionary trend towards reduced sexual dimorphism (Herremans 1990). The mention of gloss by Forbes-Watson (1967) in nominate birds from Mayotte, indicates that both of the nestlings in the nest which he found were males.

We agree with Forbes-Watson on the curious threat-behaviour of the young (also described by Appert 1968), and on the nasty smell of the birds and of their peculiar dark liquid excreta. Appert even mentions the smell before the presence of young in the nest.

Originally, this species was considered to be a cuckoo, having been described as a species of *Cuculus*. Sclater (1865) found it differed from cuckoos in the form of the nostrils, in the presence of an auxiliary plume on the body-feathers and in having 12 rectrices, and suggested it was close to the Coraciidae, although he admitted osteological differences. Verheyen (1955) found certain resemblances to the Coraciidae, but also differences including, apart from "osteometrical" ones, differences in pterylography, myology and the structure of the syrinx and the carotides. Based on morphology of the skeleton (Cracraft 1971) and on limb myology (Maurer & Raikow 1981, comparing with other Coraciiformes only), the Courol is nowadays usually placed in its own monotypic family, close to the rollers Coraciidae and ground-rollers Brachypteraciidae in the Coraciiformes. Burton (1984), studying the feeding apparatus, also classified *Leptosomus* as a monotypic family in the Coraciiformes, but found it "harder to understand the significance of all its distinctive features" and remarked on resemblances to the Galbuloidea. DNA-comparison was only performed on a limited scale and therefore, not surprisingly, left this bird in the Coraciiformes as a monotypic superfamily (Sibley & Ahlquist 1990; see also their discussion of differences of opinion about the composition of the order Coraciiformes).

Aspects of its behaviour, e.g. the threat behaviour of young in the nest (Forbes-Watson 1967), are very different from what is known in the European Roller *Coracias garrulus* (Glutz von Blotzheim & Bauer 1980); and the loud and whistling vocalizations (Herremans 1988) also suggest that the affinities with the Coraciidae may be not very close. Very little in

the life-history of the Courol would suggest affinities to the ground-rollers. Only limited sexual dimorphism in the nestling plumage is known among the Coraciiformes (e.g. in some larger Alcedinidae), and none whatsoever in the Coraciidae and Brachypteraciidae, but it is frequent in some groups of zygodactylous birds (e.g. Picidae; Verheyen 1957 considered sexual dimorphism in their juvenile plumage to be an apomorph feature!), and it also occurs in some Cuculidae. The situation of the brown phase found among the nestlings of the Diederik Cuckoo *Chrysococcyx caprius* comes very close to the one found in the Courol; such a phase could become genetically linked to females (as indeed is the case for a small percentage—the hepatic phase—in the adult Cuckoo *Cuculus canorus*). In the Koel *Eudynamys scolopaceus* there is actually sexual dimorphism in the nestling.

We stress that our nestlings of *Leptosomus* perched definitely in zygodactylous manner under all conditions. According to Sclater (1865), however, its feet are not zygodactylous to the same extent as, e.g., in Cuculidae. We question that zygodactyly would be apomorphic in the Courol (*contra* Cracraft 1971 and Maurer & Raikow 1981, who also suppose this to be the case for other traits such as syrinx morphology). Instead, zygodactyly and sexual dimorphism (including the nestling plumage) might well be plesiomorphic in the Courol.

The habit of nesting in holes is of course not a feature of the Cuculidae, but rather fits the 'Coraciiformes' and Piciformes. Nevertheless, we would not be surprised if the Courol's true affinities were not too far from the Cuculiformes, something that should be tested with biochemical methods.

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References:

Appert, O. 1968. Neues zur Lebensweise und Verbreitung des Kurols, *Leptosomus discolor* (Hermann). *J. Orn.* 109: 116–126.

Benson, C. W. 1960. The birds of the Comoro Islands: results of the B.O.U. Centenary Expedition 1958. *Ibis* 103B: 5–106.

Benson, C. W., Colebrook-Robjent, J. F. R. & Williams, A. 1976. Contribution à l'ornithologie de Madagascar (suite). *Oiseau* 46: 209–242.

Burton, P. J. K. 1984. Anatomy and evolution of the feeding apparatus in the avian orders Coraciiformes and Piciformes. *Bull. Brit. Mus. Nat. Hist. (Zool.)* 47: 331–443.

Cracraft, J. 1971. The relationships and evolution of the rollers: families Coraciidae, Brachypteraciidae and Leptosomatidae. *Auk* 88: 723–752.

Forbes-Watson, A. D. 1967. Observations at a nest of the Cuckoo-roller *Leptosomus discolor*. *Ibis* 109: 425–430.

Glutz von Blotzheim, U. N. & Bauer, K. M. 1980. *Handbuch der Vögel Mitteleuropas*. Vol. 8. Akademische Verlagsgesellschaft, Wiesbaden.

Herremans, M. 1988. Inter-island variation in bird vocalizations on the Comoros. *Proc. VI P.A.O.C.*: 281–295.

Herremans, M. 1990. Trends in the evolution of insular land birds, exemplified by the Comoro, Seychelle and Mascarene Islands. *Proc. Int. Symp. Vert. Biogeography and Systematics in the Tropics, Bonn 1989*: 249–260.

Langrand, O. 1990. *Guide to the Birds of Madagascar*. Yale Univ. Press.

Maurer, D. R. & Raikow, R. J. 1981. Appendicular myology, phylogeny, and classification of the Avian order Coraciiformes (including Trogoniformes). *Ann. Carnegie Mus.* 50: 417–434.

Milon, P., Petter, J. J. & Randrianasolo, G. 1973. *Faune de Madagascar. XXXV Oiseaux.* ORSTOM, Tananarive & CNRS, Paris.
Sclater, P. L. 1965. On the structure of *Leptosoma discolor. Proc. Zool. Soc. London*: 682–689.
Sibley, C. G. & Ahlquist, J. E. 1990. *Phylogeny and Classification of Birds. A study in molecular evolution.* Yale Univ. Press.
Verheyen, R. 1955. Analyse du potentiel morphologique et considérations sur la systématique des Coraciiformes (Wetmore 1934). *Bull. Inst. Roy. Sci. Nat. Belg.* 31 (92, 93, 94).
Verheyen, R. 1957. Bijzonderheden over het jongkleed der spechten (Picidae). *Gerfaut* 47: 177–181.

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# Towards stabilizing the nomenclature of Australian birds: neotypification of *Myzomela sanguinolenta* (Latham, 1801), *Microeca fascinans* (Latham, 1801) and *Microeca leucophaea* (Latham, 1801)

*by Richard Schodde*

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Recently, McAllan (1990) questioned the application of established scientific names for two well-known Australian oscines, namely *Myzomela sanguinolenta* (Latham, 1801) for the Scarlet Honeyeater, and *Microeca fascinans* (Latham, 1801) and *M. leucophaea* (Latham, 1801) for the Jacky Winter. These names are not typified by identifiable specimens; their types, evidently discarded at the time of drawing, are represented instead by paintings or sketches in extensive series of late 18th Century illustrations of animals and plants from central coastal New South Wales and Norfolk Island. The largest of the series, known as the Watling drawings after a principal illustrator, was brought together by Surgeon-General John White in the first decade of Australian settlement (1788-1795) and is now preserved in the British Museum (Natural History) (Sharpe 1906, Sawyer 1949, Hindwood 1970, Smith & Wheeler 1988).

Through A. B. Lambert, John Latham examined the drawings, made copies of them, and on them based the many new nominal species of Australian birds that he described in the supplements to his General Synopsis of Birds and Index Ornithologicus (Latham 1801a,b). *Certhia sanguinolenta* Latham (=*Myzomela sanguinolenta*), *Loxia fascinans* Latham (=*Microeca fascinans*) and *Sylvia leucophaea* Latham (=*Microeca leucophaea*) were among them. With the phrase 'generally